

Attorney Docket No.: KUZ-0018
Inventors: Yasukochi et al.
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REMARKS

Claims 5, 7, 10-12, 16-18, 21-23 and 27-29 are pending in this application. Claims 5, 7, 10-12, 16-19, 21-23 and 27-29 have been rejected. Claim 28 has been amended. Support for this amendment is provided at page 9, lines 23 through page 10, line 2 of the instant specification and the working examples. No new matter is added by these amendments. Reconsideration is respectfully requested in light of these amendments and the following remarks.

Rejection of Claims 5, 7, 10-12, 16-18, 21-23 and 27-33

under 35 U.S.C. § 103

Claims 5, 7, 10-12, 16-18, 21-23 and 27-33 stand rejected under 35 U.S.C. § 103 as being unpatentable over Int'l Application Pub. No. WO 99/02141 to Kamiyama ("Kamiyama") in view of U.S. Patent 5,532,373 issued to Matsumoto et al. ("Matsumoto").

Applicants respectfully traverse this rejection.

Kamiyama discloses a transdermal patch comprising an adhesive and drug retention means, the adhesive comprising a block copolymer, where the soft segments are crosslinked by means of a crosslinking agent (monomer) that is incorporated into the main chain of the soft segments during polymerization. The soft segments are formed by polymerized

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alkyl acrylate and alkyl methacrylate, and the crosslinking agent is tetraethylene glycol dimethacrylate or the like.

Matsumoto discloses a hardener including boric acid, which is used to harden a macromolecule binder (col. 35, lines 22-35, col. 36, lines 9-10, col. 36, lines 29-32). Matsumoto also teaches that a coating composition for photobleachable dye layers and other respective layers may use a solvent such as alcohols (col. 38, lines 5-9).

The Examiner suggests that the present invention is easily made by incorporating boric acid and lower alcohol of Matsumoto in the patch system of Kamiyama et al.

Applicants respectfully disagree.

Kamiyama teaches that a crosslinking agent is incorporated into the soft segment during polymerization (page 8, paragraph 2), then cross-linked by removal of solvent (page 11, paragraph 3, last line). In Kamiyama, addition of the conventional crosslinking agent such as isocyanates (page 11, paragraph 2, lines 2-6) must be carried out just prior to coating of a transdermal patch, because the crosslinking reaction begins immediately. Kamiyama's solution to this problem is incorporating a monomer (crosslinking agent) into the polymer chain during polymerization, and removal of the solvent in the polymer mixture initiates crosslinking. For this methodology,

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Kamiyama clearly teaches that at least one of the crosslinking agents has to remain unchanged during the initial polymerization (page 8, paragraph 2, lines 5-7) thereby limiting the crosslinking agent to those of such properties, e.g. tetraethylene glycol dimethacrylate (page 8, paragraph 3), which would be crosslinked via free radical polymerization of vinyl group (paragraph 4) and does not employ a further agent for crosslinking.

In contrast, the present invention uses a completely different methodology in which the crosslinking agent (boric acid or metal alcoholate) is dissolved in a lower alcohol prior to adding to a polymer mixture, or a polymer mixture is dissolved in a lower alcohol solvent and the crosslinking agent is added thereto, so that the hydroxyl group from the lower alcohol solvent provides the competition for the crosslinking agent, thereby suppressing the crosslinking of the hydroxyl or carboxyl groups of the acrylic polymer until the composition is formed into a desired shape. This is possible only through employment of a crosslinking agent which crosslinks hydroxyl or carboxyl groups in combination with a lower alcohol solvent.

Kamiyama fails to teach or suggest any method to suppress the crosslinkage. Kamiyama fails to teach or suggest crosslinkage by hydroxyl or carboxyl groups.

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Kamiyama fails to teach or suggest use of boric acid/metal alcoholate as a crosslinker or alcohol as a solvent. In fact, there is no need or preference in Kamiyama for using boric acid/metal alcoholate, which crosslinks hydroxyl or carboxyl groups.

Further, the crosslinking agent and solvent in Kamiyama cannot be replaced by the hardener and alcohol taught by Matsumoto. Matsumoto refers to boric acid as a hardener and to alcohols as a solvent, respectively, but never suggests the boric acid together with alcohol because these components are used in different compositions of Matsumoto. The hardener of Matsumoto is used in a photobleachable dye layer, intermediate layer and protective layer (see col. 35, lines 52-55) while the alcohol solvent is used in a coating composition. Thus, Matsumoto fails to teach a combination of crosslinking agent and alcohol solvent in one composition.

In an earnest effort to advance the prosecution of this case, Applicants are providing herewith a Declaration by co-inventor Takashi Yasukochi describing experiments conducted to demonstrate the effect of the solvent on properties of adhesion. These experiments explain why the present invention cannot be achieved by merely combining the teaching of Kamiyama and Matsumoto.

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As demonstrated in the Report beginning at page 3 of Mr. Yasukochi's Declaration, when boric acid or aluminum isopropoxide are used in ethyl acetate in accordance with the Example of Kamiyama (page 19, paragraph 1), only a small amount of the crosslinking agent was dissolved (see Results in Table 3 at page 6 of Mr. Yasukochi's Declaration), and the resulting adhesive is (i) too viscous to process in the case of boric acid (see Table 4 at page 7 Mr. Yasukochi's Declaration) or (ii) insufficiently crosslinked in the case of aluminum isopropoxide (see Table 5 at page 7 and page 8 of Mr. Yasukochi's Declaration). It is clear from these experiments that the crosslinkage of an acrylic/methacrylic copolymer having hydroxyl or carboxyl groups with boric acid or aluminum isopropoxide cannot successfully be carried out without dissolving the crosslinking agent in a lower alcohol during the production of the composition. See pages 8-9 of Mr. Yasukochi's Declaration).

This remarkable effect cannot be predicted from the combined teachings of Kamiyama and Matsumoto.

Further, in Ex Parte Ralph Kurt, Appeal 2007-4172 (decided November 30, 2007), the Board held that a prior art reference that is outside the field of the related art cannot be used to cure the deficiencies of other prior art ("in the present case, even one looking outside Appellant's

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field of endeavor would not look to Moroshita's Mo-Cr metal mold material to cure the deficiencies of Shiraishi's lithographic optical system (i.e. using Morishita's metal mold material in an optical system would not have been an obvious use beyond its primary purpose (i.e. molding))). This facts in this case are similar to those herein. Kamiyama and Matsumoto differ from each other not only in composition, as discussed supra, but also in the field of art to which they belong. Matsumoto clearly states that its useful hardener is that which is used in the production of photographic light sensitive material (col. 35, lines 56-58) and that alcohol is one of the useful solvents in the production of the coating composition for image forming material (col. 38, lines 5-11). Even one looking outside Kamiyama's field of endeavor would not look to Matsumoto's hardener for photographic light sensitive material and coating composition for an image forming material to cure the deficiencies of Kamiyama's transdermal patch. Using the hardener taught by Matsumoto for production of photographic light sensitive material and the alcohol taught by Matsumoto for use in the production of the coating composition for an image forming material in a single composition of a transdermal patch would not have been obvious uses beyond their primary purpose.

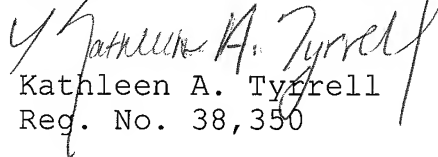
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Withdrawal of this rejection under 35 U.S.C. 103(a) is respectfully requested.

Conclusion

Applicants believe that the foregoing comprises a full and complete response to the Office Action of record. Accordingly, favorable reconsideration and subsequent allowance of the pending claims is earnestly solicited.

Respectfully submitted,


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